

it may be urged that, the forest revenues are expanding by leaps and bounds, and that they will continue to increase, and that whereas in the forests of the Northern Circle a very large proportion of the area consists of forest lands under reboisement, a revenue from fodder grass and grazing being the chief income derivable from it, the distribution of the total forest revenues of the circle over the total forest area, in order to arrive at an average rate of revenue per acre, gives no indication whatever of the revenue which the timber-covered and timber-exploitable forests of the circle are capable of yielding, and are now returning.

71. The expenditure which has been incurred during the year upon surveys and working plans amounts to Rs. 58,040-15-4, which sum is made up of :—

Rs. 35,181-7-11 cost of the forest surveys.

Rs. 17,159-14-0 cost of Working Plans Division.

Rs. 5,699-9 5 cost of surveyors attached to the Divisional Forest Officers for preparing maps, laying out compartments in the forests, defining forest boundaries on the ground, &c.

## CHAPTER III.

### PROTECTION AND IMPROVEMENT.

#### 1.—ESTABLISHMENTS.

72. The Controlling Staff of the Forest Department, Northern Circle, which consists of 1 Conservator of Forests, and 13 Deputy and Assistant Conservators of Forests, remained unchanged during the year.

73. Mr. Gleadow, Deputy Conservator of Forests, 4th grade, who had proceeded on furlough to Europe for 18 months from the 15th April 1888, returned to India, and was posted to North Thána as Divisional Forest Officer from 1st November 1889.

74. Mr. Hornidge, whose services had been placed at the disposal of the Government of India for employment in the Central Provinces, was retransferred to the Bombay Forest Department, and posted to the Sholápur Division, of which he assumed charge on the 18th October 1889.

75. Mr. Mainwaring, Deputy Conservator of Forests, 3rd grade, and Divisional Forest Officer, Ahmednagar, proceeded on furlough to Europe for one year from 5th November 1889, and Mr. Hexton, Deputy Conservator of Forests, 1st grade, and Divisional Forest Officer, Surat, availed himself of privilege leave for 2 months and 18 days from 31st January 1890.

76. The following officers also enjoyed privilege leave during the year for periods stated against them :—

Mr. R. S. F. Fagan, Deputy Conservator of Forests, 4th grade, and Divisional Forest Officer, West Khándesh, from 25th August to 24th September 1889.

Mr. C. Greathead, Deputy Conservator of Forests, 3rd grade, and Divisional Forest Officer, Sátára, from 12th September to 26th October 1889.

77. The numerical strength and constitution of Sub-Assistant Conservators attached to the Northern Circle, underwent no change during the year. Mr. Ganesh Krishna Shaháne, who was under suspension at the close of last year, was dismissed the service under orders contained in Government Resolution No. 5320, dated 25th July 1889, for gross neglect of duty, carelessness and insubordination, for absenting himself from his charge without leave, and for several other grave charges of misconduct.

78. The sanctioned strength of permanent protective establishment, the monthly cost of which amounts to Rs. 21,503, in the several divisions of the Northern Circle, is exhibited in the following table :—

Number.	Division.	Number of Ranges.	RANGE FOREST OFFICERS.						Forest Guards.						Remarks.		
			Rangers.				Foresters.										
			Rs. 100.	Rs. 80.	Rs. 60.	Rs. 50.	Rs. 40.	Rs. 30.	Rs. 20.	Rs. 15.	Rs. 12.	Rs. 10.	Rs. 9.	Rs. 8.		Rs. 7.	
1	North Thána ..	6	}	3	4	6	12	20	30	30	6	14	25	25	70	80	The pay of the Rangers and Foresters is personal and the men are transferred from one range to another, as the exigencies of the service may require. Therefore the number of appointments in each grade is shown in lump for the whole Circle.
2	South Thána ..	8									8	14	25	23	70	115	
3	East Khândesh ..	13									8	16	20	20	40	75	
4	West Khândesh ..	10									7	14	18	18	50	102	
5	Nasik ..	14									10	20	25	26	50	158	
6	Ahmednagar ..	11									6	12	22	22	50	85	
7	Poona ..	11									9	17	26	25	60	120	
8	Sâtara ..	14									9	18	24	22	57	102	
9	Sholâpur ..	7									3	6	11	8	18	68	
10	Surat ..	6									2	4	4	6	18	27	
11	Panch Mahâls ..	5									2	5	10	10	30	48	
Total ..		105	3	4	6	12	20	30	30	70	140	210	205	511	930		

79. In the Násik and Poona Divisions a temporary establishment of 6 and 45 Forest Guards, respectively, was employed in addition to the above.

80. Government in their Resolution No. 4832, dated 6th July 1889, in the Revenue Department, disposed of the proposals, which, in obedience to the orders of Government, had been submitted by the Conservators of Forests, for a reorganization of the subordinate Forest staff, of which mention appears in paragraph 86 of last year's report, by directing a committee to be composed of the 3 Commissioners of Divisions, the 2 Conservators of Forests, Northern and Southern Circles, Dr. T. Cooke, Principal of the College of Science, Poona, and Mr. G. W. Vidal, C. S., late President of the Forest Commission, to assemble at Poona during the rains, in order to draw up a comprehensive scheme for the thorough reorganization of the subordinate forest establishments. This committee accordingly met during the rains of the year under report, and after careful and lengthy discussion and consideration submitted a project, upon which no orders had been issued before the close of the year.

81. The sanctioned complement of the office establishment, in which no change has been made during the year, is exhibited, with its monthly cost, in the statement given below :—

No.	Division.	NUMBER AND GRADATION.											Monthly Cost.
		Clerks.								Peons.			
		Rs. 100	Rs. 80	Rs. 60	Rs. 50	Rs. 40	Rs. 30	Rs. 20	Rs. 15	Rs. 10	Rs. 9	Rs. 8	
1	Direction ... ..	1	1	1	2	2	2	2	...	1	1	5	Rs. 579
2	North Thána ... ..	...	...	...	1	1	1	1	2	...	1	3	203
3	South do. ... ..	...	...	...	1	1	1	1	2	...	1	3	203
4	East Khándesh ... ..	...	...	...	1	...	1	2	2	...	1	3	183
5	West do. ... ..	...	...	...	1	...	1	2	2	...	1	3	183
6	Násik ... ..	...	...	...	1	...	1	2	2	...	1	3	183
7	Ahmednagar ... ..	...	...	...	...	1	1	2	2	...	1	3	173
8	Poona ... ..	...	...	...	1	...	1	2	2	...	1	3	183
9	Sátára ... ..	...	...	...	1	...	1	2	2	...	1	3	183
10	Sholápur ... ..	...	...	...	...	1	1	2	1	...	1	3	158
11	Surat ... ..	...	...	...	1	...	1	2	2	...	1	3	183
12	Panch Maháls ... ..	...	...	...	...	1	1	2	1	...	1	3	158
13	7 Sub-Assistant Conservators' Offices ... ..	...	...	...	...	...	...	7	..	...	14	217	
Total ... ..		1	1	1	10	7	13	22	27	1	12	52	2,789

82. The total expenditure upon forest establishments during the year, has amounted to Rs. 4,55,835-3-6 under the following budget sub-heads :—

	Rs.	a.	p.
B. I a.—Conservator's salary ...	18,000	0	0
B. II. a.—Conservator's travelling allowance ...	2,400	0	0
B. I. b.—Superior officers' salary ..	1,02,417	4	7
B. II. b.—Superior officers' travelling allowance ...	25,378	12	4
B. I. c.—Subordinate officers' protective establishments' salary.	2,48,537	15	2
B. II. c.—Subordinate ditto travelling allowance ...	14,326	7	1
B. I. d.—Office establishments' salary ...	33,376	3	5
B. II. d.—Office ditto travelling allowance ...	11,398	8	11

Total ... 4,55,835 3 6

## 2.—GENERAL PROTECTION AND BREACHES OF THE FOREST LAW.

83. A comparative statement showing the cases tried before Magistrates for breaches of forest law during the year, and the one preceding it, is given below :—

No.	Division.	1888-89.		1889-90.		PERCENTAGE OF FAILURES.	
		Prose- cutions.	Acquittals.	Prose- cutions.	Acquittals.	1888-89.	1889-90.
1	North Thána ... ..	72	34	106	22	47·2	20·7
2	South do. ... ..	209	51	208	34	24·4	16·3
3	East Khándesh ... ..	48	15	371	22	31·2	5·9
4	West do. ... ..	126	27	186	14	21·4	7·5
5	Násik ... ..	48	5	105	19	10·4	18·0
6	Ahmednagar ... ..	53	15	59	18	28·3	30·5
7	Poona ... ..	279	47	216	57	16·8	26·3
8	Sátára ... ..	44	17	27	13	38·6	48·1
9	Sholápur ... ..	101	34	118	45	33·6	38·1
10	Surat ... ..	9	...	8	2	...	25·0
11	Panch Maháls ... ..	42	10	37	7	23·8	18·9
	Total ...	1,031	255	1,441	253	24·7	17·5

84. At the close of last year 108 cases of forest offences were awaiting trial, and during the year 1,432 new cases were presented : thus making a total of 1,540 cases in all. Of these, 1,441 cases were disposed of, as shown above, leaving 99 cases pending at the close of the year in different divisions, as given below :—

No.	Division.						Number of Cases.
1	South Thána	...	...	...	...	...	6
2	East Khándesh	...	...	...	...	...	9
3	West do.	...	...	...	...	...	5
4	Násik ...	...	...	...	...	...	18
5	Ahmednagar	...	...	...	...	...	14
6	Poona...	...	...	...	...	...	27
7	Sátára	...	...	...	...	...	1
8	Sholápur	...	...	...	...	...	16
9	Surat ...	...	...	...	...	...	2
10	Panch Maháls	...	...	...	...	...	1
	Total	...	...	...	...	...	99

85. The general protection of the forests may be considered to have been satisfactory. Seeing that the areas under watch and guard by forest subordinates, in the Northern Circle, extend over 8,600 square miles and 597 acres of reserved and protected forest, and also include wide stretches of cultivation areas occupied under the survey settlement, the reserved trees growing upon which are the property of Government, it cannot be urged with reason, that 1,432 cases brought up before the Magistrates during 12 months, points to undue severity, or a too hasty resort to the higher criminal courts. The percentage

of failures of the cases presented for trial during the year, has been comparatively low, which may be taken to indicate that prosecutions have been conducted with care, and have not been instituted without proper cause, and also that the supervision exercised by Divisional Forest officers has been searching and detailed. In the two Thána, the two Khándesh and the Panch Maháls Divisions the best results appear; and they reflect credit upon Messrs. Desái, Fagan, Gleadow, Millett, Keys, Divisional Forest officers and the Sub-Assistant Conservators and the Range Forest officers under them. In the Deccan divisions the proportion of failures has increased, and it is difficult to assign a cause for this. At the same time it must be mentioned that the privileges of shikár and of carrying cutting instruments into the forests for collecting ráb, thorns and firewood, lead to much mischief and render the detection of forest offenders a matter of very great difficulty. The exemption of timber and other produce brought from occupied and other private lands from the operation of the rules under Section 41 of the Forest Act affects prejudicially, as has been reported often, the protection of the State forests and of State timber upon private holdings, but the newly amended Forest Act will no doubt supply the remedy.

86. A classification of the 1,432 new cases prosecuted during the year is given below, as prescribed by the Forest Department Code :—

No.	Division.	CHARACTER OF OFFENCES.					REMARKS.
		Injury to Forests by Fire.	Unauthorised Fellings or appropriation of Wood and minor Forest Produce.	Grazing without Permission or in Tracts where Grazing is prohibited.	Other Offences.	Total.	
1	North Thána ...	1	102	.....	3	106	
2	South Thána ..	2	150	1	47	200	
3	East Khándesh ..	8	107	8	255	378	
4	West Khándesh...	27	38	3	103	171	
5	Násik ...	3	45	6	55	109	
6	Ahmednagar ..	...	23	37	7	67	
7	Poona ...	1	76	105	28	210	
8	Sátára ...	...	12	9	6	27	
9	Sholápur ..	...	11	86	19	116	
10	Surat ...	...	9	.....	1	10	
11	Panch Maháls ...	...	37	1	...	38	
Total ..		42	610	256	524	1,432	

87. The number of cases treated in accordance with Government Resolution No. 7844, dated 3rd October 1884, in the Revenue Department, by Assistant Collectors, under Section 43 of the Land Revenue Code, in the protected forests of the two Thána divisions, appears in the following table, as compared with that of the previous year :—

Forest Division.	1888-89.					1889-90.					REMARKS.
	No. of Cases.	Value of Forest Produce.	Acquit- tals.	Convic- tions.	Amount of Fines.	No. of Cases.	Value of Forest Produce.	Acquit- tals.	Convic- tions.	Amount of Fines.	
		Rs. a. p.			Rs. a. p.		Rs. a. p.			Rs. a. p.	
North Thána...	42	275 15 0	...	42	275 15 0	29	119 14 1	...	29	161 2 1	
South do. ...	61	89 6 9	...	61	118 12 3	53	245 9 10	...	53	423 10 4	
Total ...	103	365 5 9	...	103	394 11 3	87	365 7 11	...	87	584 12 5	

88. A comparative statement showing the number of cases compounded under Section 67 of the Forest Act, in the several divisions of the Northern Circle, is given below, in accordance with the instructions contained in Government Resolution No. 3527, dated 2nd May 1884, in the Revenue Department :—



No.	Division.	TAKEN INTO COURT.		COMPOUNDED UNDER SECTION 67 OF THE FOREST ACT.		TOTAL NUMBER OF CASES.	
		1888-89.	1889-90.	1888-89.	1889-90.	1888-89.	1889-90.
1	North Thána ...	65	106	38	46	103	152
2	South Thána ...	204	208	306	211	510	419
3	East Khándesh ...	42	371	280	446	322	817
4	West Khándesh ...	107	186	454	492	561	678
5	Násik ...	52	165	1,137	852	1,189	957
6	Ahmednagar ...	50	59	2,199	2,157	2,249	2,216
7	Poona ...	312	216	439	742	751	958
8	Sátára ...	37	27	250	280	287	307
9	Sholápur ...	109	118	952	1,165	1,061	1,283
10	Surat ...	7	8	17	26	24	34
11	Panch Maháls ...	42	37	82	68	124	105
Total ...		1,027	1,441	6,154	6,485	7,181	7,926

89. The large number of cases compromised in almost all the divisions tends to show that a spirit of conciliation has actuated Forest officers in dealing with forest offenders. In the above-gháts divisions grazing in the closed compartments is the prevailing crime, and a very natural one it is, when it is remembered that no such grass is to be found elsewhere over the country, when the season ages, as is to be seen within the closed compartments of the forests, in the Deccan, which are under treatment for reboisement. The sight of luxuriant pasturage offers an irresistible attraction to hungry cattle and to owners of lean kine, and more particularly to wandering graziers. Trivial offences of other kinds, which are not committed of set purpose and in defiance of the law, are invariably treated under Section 67. This system of disposal of trivial offences works, on the whole, satisfactorily, and although it may produce a less deterrent effect than a criminal prosecution does, still there can be no doubt that it tends to improve forest protection, to avoid derogating from the self-respect of such forest offenders as do not belong to the criminal classes, while at the same time it does not take Forest officials away from their other duties of conservancy and works to devote hours and days to the conduct of criminal prosecutions in distant magisterial courts.

90. The following statement shows the amounts realised from cases which were compounded under Section 67 of the Act in the several divisions of the Northern Circle during the year, as directed in Government Resolution No. 8738, dated 24th December 1887, in the Revenue Department :—

No.	Division.	Amount.		
		Rs.	a.	p.
1	North Thána...	626	11	0
2	South do. ...	1,202	1	6
3	East Khándesh ...	1,842	0	9
4	West do. ...	2,091	14	3
5	Násik... ..	3,366	14	8
6	Ahmednagar ...	3,271	7	11
7	Poona... ..	2,768	6	5
8	Sátára ... ..	373	3	1
9	Sholápur ... ..	1,294	15	11
10	Surat ... ..	145	9	0
11	Panch Maháls ...	91	10	7
Total ...		17,074	15	1

Where illicit grazing, as in the above-gháts divisions, has been the predominating offence compounded, there the amount of recoveries has been rateably lower; where timber has been cut or stolen the value thereof has caused the damages to be comparatively large.

91. The following statement exhibits the number of cattle of different kinds impounded in the several divisions of the Northern Circle during the year, under section 69 of the Forest Act, for trespassing in forest areas set apart for plantations, or in portions of forest reservations closed against the grazing of cattle:—

No.	Division.	Cows and Bullocks.	Buffaloes.	Camels.	Horses.	Asses.	Sheep.	Goats.	Total.
1	North Thána ...	884	142	...	...	...	215	...	1,241
2	South Thána ...	488	225	...	...	1	239	...	953
3	East Khándesh ...	4,499	704	...	5	...	2,097	3,633	10,938
4	West Khándesh ...	9,593	1,030	5	69	1	3,321	2,824	16,849
5	Násik ...	5,406	217	...	40	7	2,763	9,455	17,888
6	Ahmednagar ...	32,318	1,809	1	399	114	27,680	14,048	76,369
7	Poona ...	10,076	860	...	122	75	12,927	7,531	31,591
8	Sátára ...	5,085	644	4	68	78	7,209	1,800	14,888
9	Sholápur ...	14,761	1,355	1	160	235	7,304	1,678	25,494
10	Surat ...	66	9	...	...	...	...	40	115
11	Punch Maháls ..	69	49	...	7	...	304	617	1,046
	Total ...	83,245	7,044	11	870	511	64,059	41,626	1,97,366

92. The total of number of cattle impounded during the year is slightly less than that of the previous year, which was 200,615. In the North Thána Division Mr. Gleadow states that great difficulty is experienced by the scarcity of pounds, very few villages being furnished with these useful institutions, for examples in the Máhim Táluka with its 181 forest villages there are only 3 pounds, in the Dáhanu Táluka where there are 202 forest villages, there are only 6 pounds, in Váda with 135 forest villages but 3 pounds; consequently cattle in order to be placed into a pound have, in the majority of cases, to be driven from 10 or 15 miles, and in such circumstances the owners of cattle find sufficient time to rescue their animals from the Forest Guard who may be taking them to the pound.

93. In the Ahmednagar Division, it will be seen, that there is a decrease of nearly 10,000 impoundings, as compared with the previous year; however 76,369 may appear at first to be a large number to be impounded in a single division, but more than half consists of sheep and goats. Government, and the Government of India also, very rightly lay strong stress upon a rational treatment of grazing in forests which will be to the interests of forestry as well as of pasturage; and in this view they urge the desirability:

- (a) of limiting the number of cattle,
- (b) of fixing a season when grazing will be allowed,
- (c) of closing forests in rotation for a sufficiently long period.

94. It goes without saying that no system of forestry can have free course and be satisfactory in its most vital points if cattle are allowed into the portions of the forests which are closed for reproduction, natural or artificial; that no regulation of grazing in the forests upon the lines given by the Government of India can be carried out when cattle are permitted to graze in open forests in excess of the number prescribed according to the defensible character of the forest vegetation as well as the capabilities of grazing; that no season can be enforced when cattle will graze in defiance of prescription at all, and any, decided times; that closure becomes a farce and a bye-word when it is freely violated.

95. The closed compartments of the Deccan forest lands, which are chiefly forests under regeneration, present to view the most attractive pasturage in the whole country side, and no wonder that cattle hungering for a good meal are attracted to enter and eat, and that cattle owners, more particularly wandering graziers, drive their cattle in wilfully to graze, risking detection, in the knowledge that the cattle-pound fee will be a very cheap price to pay for the enjoy-

ment and benefit their animals have obtained. There is no severity in impounding cattle of people, who declining to pay the ridiculously low grazing fees imposed upon cattle allowed into the open compartments of forests, or who weighing the cost of cattle-pound fees against the value of the illicit grazing, wilfully drive their cattle into closed forests. The impounding of such cattle does not point to the system of rotation and closure being inappropriate, nor to the size of working circles being too small, their number being too great, nor to the system of management being too detailed. It shows that the forest subordinates are striving honestly to perform their duties of conservancy for which they are employed: it shows that the vegetation, be it only inferior such as grass, is growing in luxuriance upon the bleak stony hill-sides which only a few years ago were bare and barren, and that consequently the reboisement of these lands is in active operation: it shows moreover that the pound fees are not sufficiently high to be deterrent, and it shows that greater attention is required to be given to the forest-grazing question. Government have in a recent Resolution recorded: "It is notorious that in every village many old, wornout or useless head of cattle are kept which are of no service to their owners and are not employed by them for any purpose but which they simply keep until they die of old age, disease or starvation, leaving them to forage for themselves with the cows, calves and other village cattle and never stall-feeding them or providing them with food." To impound such cattle when they trespass into closed forest is an unavoidable proceeding. Wandering graziers come and go, roaming about with large flocks of sheep and goats and horned cattle, and deliberately drive the animals into any grass or other lands they may come across, regardless whether the lands are private or public, whether they are forest lands, open or closed; to impound such cattle is the only protection open to the rayats, and is a very lenient plan of punishment resorted to by Forest officers. When cattle are permitted to graze in compartments which have served recently as coupes and been closed for a term of years for reproduction, the future of the forests of the working circle thus maltreated is jeopardized, and practically the essence of the working plan is blotted out. Of the 8,000 square miles of forests constituted under the Forest Act, which were in maintenance during the year of this report, not more than one-fourth portion, if so much, has been closed; this proportion, owing to the force of local conditions requiring forest grazing to be provided to the cattle of forest villages in the immediate proximity of the forest villages, is distributed in patches in all and many directions; and the fact that 197,366 head of cattle, of which more than one-half are sheep and goats, should have been caught trespassing into these closed areas is not extraordinary.

### 3.—CIVIL SUITS.

96. The suit which was brought against the Forest Department in the North Thána Division by one Balwantráo Hari Gavankar, referred to in paragraph 101 of last year's report, has been heard by the Assistant Judge of Thána, who decided that the plea urged by Balwantráo Hari, that the figures entered in his tender were by accident transposed, was a true one, but that the contractor was to some extent responsible for his carelessness: and the Judge directed accordingly that half the earnest money should be returned to the plaintiff, each party paying its own costs.

97. One Gangádhár Vishwanáth Kondkar filed a suit against the Department in the District Court of Thána to recover Rs. 2,700 as damages for the suspension and cancellation of his contract and confiscation of his material in the Rajiwli Coupe of 1888-89. This suit was not heard up to the close of the year. Government in their Resolution No. 2558, dated 12th April 1890, have sanctioned its defence.

98. The suit brought against the Department by Alli valad Mohidin, Patel of Bhiwandi in the South Thána Division, mentioned in paragraph 102 of last year's Administration Report, was decided in favour of the plaintiff and damages amounting to Rs. 72-7-8 were awarded and paid.

99. The suit instituted by Dipchand Bálkison Lodi in the District Court of Poona against Mr. Wáman Rámchandra Gaundé, referred to in paragraph 103

of last year's report, has been decided against Mr. Wáman Rámchandra Gaundé personally. The immunity, which as a public servant the Sub-Assistant Conservator of Forests claimed under Section 73 of the Forest Act, and which Government had acknowledged he was entitled to, in the circumstances of the case, by undertaking the defence of the suit, was disallowed, and judgment given in favour of the plaintiff against Mr. Wáman Rámchandra Gaundé in his private capacity for Rs. 341, with costs in proportion. On receiving copy of the judgment the Conservator again represented the whole matter to Government soliciting their sanction to an appeal being made to the High Court, and the Remembrancer of Legal Affairs supported his proposal with a very strong favouring opinion, so that Government in their Resolution No. 4028, dated 3rd June 1889, Revenue Department, sanctioned an appeal be preferred; this was accordingly done, but it did not come up for hearing during the year. However the case has been decided since, and the High Court has reversed the judgment of the Poona Court, has upheld the claim of the Sub-division Forest Officer to protection under section 72 of the Forest Act, and has decided against the original plaintiff, Dipchand Bálkison Lodi, with costs all through.

#### 4.—FOREST FIRES.

100. The following statement exhibits the results of fire conservancy in the several divisions of the Northern Circle during the year as compared with those of the previous year :—

No.	Division.	Forest Area placed under protection against Fire.		Acreage burned.		Percentage burned.		Expenditure incurred.		REMARKS.
		1888-89.	1889-90.	1888-89.	1889-90.	1888-89.	1889-90.	1888-89.	1889-90.	
								Rs.	Rs.	
1	North Thána ..	381,296	440,347	15,049	8,041	3.9	1.7	1,106	1,175	The figures entered in column "Forest area under protection against Fire" during 1888-89 include the areas provisionally notified under Sections 4 and 28 of the Act which are in charge of the Forest Department but which are not included in Form No. 49.
2	South Thána ..	434,905	506,409	13,914	16,312	3.1	3.2	473	683	
3	East Khándesh ..	543,921	562,473	15,867	27,972	2.9	4.9	22	70	
4	West Khándesh ..	917,567	1,130,888	643,169	596,745	70.0	51.3	45	138	
5	Násik ..	817,828	763,327	12,074	6,360	1.4	0.83	36	14	
6	Ahmednagar ..	558,885	563,512	2,565	817	4.5	0.14	..	..	
7	Poona ..	473,748	477,935	1,635	4,798	0.34	1.0	..	74	
8	Sátára ..	426,269	437,159	481	480	0.11	0.10	15	8	
9	Sholápur ..	174,526	177,242	1,852	665	1.0	0.37	..	..	
10	Surat ..	478,524	478,109	298,531	215,000	62.3	44.9	..	2	
11	Panch Maháls ..	204,381	207,765	11,088	13,317	5.3	6.4	..	..	
	Total ..	5,413,910	5,774,166	1,016,215	884,502	18.7	15.3	1,697	2,164	

101. It will be seen that fire conservancy was not unsuccessful, for the improvement in this important branch of forest management which has been reported in detail last year, has been more than maintained. Forest officers have given great care and attention to the prevention of fires and to finding out the origin of fires, and the subordinate protective establishments have, speaking in a general way, worked right well in watching and guarding against and in prompt attack upon occurring fires.

102. The written proceedings required to be submitted by the Range Forest Officer, upon every fire appearing in the forests of his range, has had a beneficial effect against the spread of forest-fires, as also in the adoption of precautions by forest subordinates, and in keeping the latter constantly on the alert. In the North Thána Division the improvement this year is marked, the area traversed by fire being 8,041 acres against 15,049 in the previous year; and although the usual precautions of burning fire-traces along spurs, sides of roads, boundaries of forest blocks and of coupes, &c., were undertaken to prevent the spread of fires from outside still the wide world privileges of coming and going, to cut and take ráb material, to collect firewood, to shikár, and the burning of grass under mhowra trees were the chief sources of forest fires, which broke out generally inside or within the forest boundaries. The increase of 2,398 acres burnt in South Thána, over the figures of last year, is owing to the extended operations of the contractors constructing the duct line of the Tansa Water Work through reserved forests in the Bhiwandi and Sálsette Ranges. Thousands of labourers were employed upon this work; and although great care was taken to guard against fires, still, despite all precautions, the forests were burnt.

103. In the two forest divisions of Khándesh, the East and the West, the former exhibits an inconsiderable increase in the percentage of area burned,



while the latter, a decrease over the figures of the preceding year. Although the spread of the fires in West Khándesh has been somewhat less, still the percentage of failures is the heaviest in the Northern Circle; and Mr. Fagan, the Divisional Forest Officer, very correctly records that so long as the people are free to enter the reserves, the fires in his division will occur as now, year after year, notwithstanding all the efforts of the Divisional Forest Officer and his subordinates. The Collector of Khándesh, Mr. Loch, in forwarding the Administration Report of the West Khándesh Division, writes, with reference to forest fires:—

“The undersigned regrets that so far no improvement has taken place in the matter of forest-fires, though Mr. Fagan and his subordinates have exerted themselves successfully in the detection of offenders in many cases. The question, for a further curtailment of privileges in the forests where fires have been most frequent, is now under consideration.”

104. In all other divisions of the Northern Circle except Surat fire conservancy shows decided improvement, and although the Surat Division exhibits a decrease in the area burned, still 44·9 is a large percentage as compared with that of other divisions; but the leased Dángs are responsible for this very bad record; here the inhabitants are not under the control of the Forest officers, being the subjects of the Bhil Rájás. The forests are as often set fire to intentionally as carelessly, and as the population is sparse, it is difficult to get together a sufficient number of men to fight successfully against a big fire. When forest reservations have been selected and demarcated in the Dángs, it is probable that fire conservancy will have a better chance.

105. Village officers and forest villagers have rendered cordial assistance in many directions in the suppression of forest-fires. But a fire battle is not an easy fight as may be imagined by those who have not seen a long wave of fire roaring over a savannah, travelling at great pace, where the grass is more than 6 feet high. When all officers have worked well individual praise might appear to be invidious; however the difficulties of the situation give comparative value to the merit of success, and to Mr. F. R. Dasái, Deputy Conservator of Forests, 1st Grade, and Divisional Forest Officer, East Khándesh, the Conservator must accord special thanks for the fire discipline of his division.

### 5.—GRAZING AND FODDER GRASS.

106. Notwithstanding the abnormally high receipts from grass and grazing recorded last year, there was a further increase of Rs. 14,882 in the year under report, the total receipts under *Id.* being Rs. 3,42,037 against Rs. 3,27,165 in the previous year; and this result is due, in a great measure, to the more efficient working of the fee system, which is becoming better understood by the people.

107. The arrangements of the year regarding the supply of grass and provision for grazing, as compared with the totals of last year, are exhibited in the following table:—

No.	Division.	VALUABLE RUNS OF FODDER GRASS.		FEE GRAZING.			AUCTION GRAZING.		FREE GRAZING.			GRASS GIVEN TO COMMISSARIAT DEPARTMENT.		Area closed to Grazing	Miscellaneous Grazing Revenue.	Total Grazing Revenue
		(a) Area.	(b) Amount realised.	(a) Area.	(b) Number of Animals grazed.	(c) Amount realised.	(a) Area.	(b) Amount realised.	(a) Area.	(b) Number of Animals grazed.	(c) Money value of the Privileges or Right.	(a) Area.	(b) Amount.			
		Acres.	Rs.	Acres.		Rs.	Acres.	Rs.	Acres.		Rs.	Acres.	Rs.	Acres.	Rs.	Rs.
1	North Thána ...	7,497	13,438	...	4,046	1,007	...	...	253,014	171,750	42,937	...	...	15,028	...	14,448
2	South Thána ...	4,005	925	41,044	18,821	4,956	...	...	41,044	178,296	36,000	...	...	20,916	159	6,040
3	East Khándesh...	31,196	11,269	472,466	1,97,893	28,131	...	...	298,851	12,463	1,470	...	...	38,168	5,647	45,047
4	West Khándesh	20,653	7,659	948,123	5,20,842	63,783	...	...	848,966	81,000	15,309	...	...	213,471	7,359	73,781
5	Nasik ...	32,316	21,660	514,455	2,25,322	32,194	1,414	121	329,741	187,468	31,794	...	...	131,707	1,320	55,205
6	Ahmednagar ...	5,204	1,485	313,106	1,25,895	18,079	10,049	2,565	14,219	43,899	1,807	4,275	6,412	216,889	3,911	26,049
7	Poona ...	47,861	29,761	156,470	1,05,638	18,492	55,434	855	131,357	21,483	50,000	19,392	88,000	56,123	1,912	51,025
8	Sátara ...	43,279	24,429	120,411	89,440	5,399	126,774	12,064	135,301	...	17,500	...	...	30,791	80	41,912
9	Sholapur ...	44,584	10,585	28,538	32,506	4,875	...	...	12,374	60,736	7,783	...	...	115,737	1,250	16,710
10	Surat ...	...	...	41,717	5,900	615	301	42	706	1,000	250	...	...	915	...	657
11	Panch Maháls ...	16,983	1,524	40,100	20,114	4,642	...	...	132,000	45,000	13,000	...	...	93,739	13	6,179
	Total ...	233,568	1,22,733	2,676,430	12,95,717	1,82,083	194,023	15,640	2,293,573	808,016	2,17,851	23,667	44,412	872,777	21,581	3,42,037
	Total for 1889-90 ...	271,694	1,30,803	2,800,372	15,62,784	1,63,342	207,961	12,630	978,993	577,367	2,08,680	12,389	89,387	633,175	20,425	3,27,165



108. Although the gross receipts are in excess of that of the past year, still there is a decrease in certain divisions as will be seen from the following comparative statement :—

No.	Division.	Grazing Revenue, 1888-89.	Grazing Revenue, 1889-90.
		Rs.	Rs.
1	North Thána ... ..	13,316	14,443
2	South Thána ... ..	7,299	6,040
3	East Khándesh ... ..	46,372	45,047
4	West Khándesh ... ..	54,870	78,781
5	Násik ... ..	43,293	55,205
6	Ahmednagar ... ..	40,864	26,040
7	Poona ... ..	52,355	51,023
8	Sátára ... ..	40,500	41,912
9	Sholápur ... ..	21,769	16,710
10	Surat ... ..	794	657
11	Panch Maháls ... ..	5,733	6,179
Total ...		3,27,165	3,42,047

109. In the North Thána Division the increase of Rs. 1,127 is due to better prices for fodder grass. In the South Thána Division the decrease of Rs. 1,259 is attributed to a small number of cattle having come from above the gháts in search of pasturage in the forests. In the East Khándesh Division the abnormal receipts under "Cut grass" of the previous year could not be reached, and hence the decrease of Rs. 1,325. The increases in West Khándesh and Násik Divisions, on the other hand, are due to excellent prices obtained at auction sales for fodder grass, for which there was considerable demand owing to a scarcity of grass outside of forest boundaries through a generally deferred and capricious rainfall.

110. The decrease of Rs. 14,824 in Ahmednagar is due to none of the closed reserves having been thrown open to grazing this year as last, to the postponed arrival of the rains, and to the larger forest area placed at the disposal of the Commissariat Department for cutting and taking fodder-grass. The slight decrease of revenue in the Poona Division is accounted for by the enormous increase in the forest-area assigned to the Commissariat Department, for exploitation of cut grass, being 19,000 acres against 11,000 in the previous year. The value of the grass and grazing of the forest lands thus allotted to the Commissariat Department may be calculated at the rate of Rs 2 per acre, which will give Rs. 38,000.

111. The increase in the Sátára Division is due mainly to keen competition for fodder grass areas, the crops upon which were sold for cutting or for grazing, and also, in a small degree, to increased collections of grazing fees. The decrease in Sholápur is owing to 42,648 acres of forest lands which are in the ordinary closed list having been thrown open to grazing on fees last year, which regrettable proceeding, in view of reboisement, was not adopted again during the year of the report. The decrease and increase in the Surat and Panch Maháls Divisions call for no special explanation as they are due to such fluctuations in the market as always occur in commercial business.

112. Government very rightly insist that the claims of forest villagers upon the forests for the grazing of their cattle must be recognized as a determining element in the regulation of forest grazing: seeing how numerous are the forest villages and the geographical relation between villages and forests, so that a system of large forest-blocks with large solid areas of closed forest and a larger area of open forests would result in locating many of the open pasturage compartments of forests a long way-distant, in not a few cases more than a day's journey, from villages the cattle of which have admitted claims to enjoy privileges of free, or fee-grazing for some portion, if not all, of their cattle, a detailed system of regulation is absolutely necessary. Forest-blocks

have to be of small size, and forest compartments in consequence, to be of small area, so that the open portions of a forest-block may be within convenient distance of the forest villages which have contributed forest and waste lands to the formation of the forest-block. If what may possibly be termed the minute system of working forest grazing on rotation, at present in practice in the Deccan divisions, as well as in other forests of the Presidency, were to be abandoned for a system upon broader lines with large working circles, with wide stretching pasturage ranges and with comparatively far-reaching closed belts, not only would forest villagers suffer great inconvenience, but receipts from grazing would very appreciably decline; so that the change of management would cause a heavy loss of revenue, and at the same time would set the forest villagers in opposition to forest conservancy to a far greater degree than any other kind of restriction could effect.

113. The subject of the regulation of forest grazing has been under earnest consideration by Government for a long time. Reports by Revenue as well as Forest officers had been called for and submitted. The Forest Commission gave careful attention to this matter, and made valuable recommendations and suggestions, and the final orders which were issued after the close of the year, and will appear in next year's report will no doubt work greatly to the advantage of forest conservancy and to the real interests of rural cattle. The aim of these orders is to exercise closer superintendence over the cattle entered for grazing into the forests, so that rotation in a sufficiently long period of closure, limitation of numbers, and the observance of a grazing season for open areas, may be applied, together with a restriction upon the free and illicit grazing which have been so prevalent in the past. There has been no proposal to expand the sub-divisions of forest working circles with a corresponding numerical decrease of the latter. On the contrary, united opinions urge that for the convenience of the village cattle, in deference to the habits and customs of the country, each forest grazing circle must be of small compass.

114. The year's census of cattle of all descriptions in the Collectorates which come within the boundaries of Northern Forest Circle, gives the following tabulated return:—

No.	Collectorate.	Cows and Bullocks.	Buffaloes.	Horses.	Asses and Mules.	Sheep.	Goats.	Cattle.	Elephants.	Total.	Remarks.
1	Thána ...	336,342	92,998	1,480	25	8,051	46,699	...	...	530,595	
2	Khândesh ...	606,119	130,725	22,137	7,888	74,903	74,903	...	...	986,867	
3	Nâsik ...	448,080	64,164	13,224	2,900	95,165	104,543	...	...	727,841	
4	Ahmednagar ...	622,298	59,090	22,774	5,107	230,176	168,291	...	...	1,147,796	
5	Poona ...	520,666	84,965	14,022	3,971	169,501	169,502	...	...	962,627	
6	Sâtara ...	512,750	158,828	15,768	2,619	386,148	39,493	27	3	1,165,636	
7	Sholâpur ...	429,971	75,969	12,041	3,368	173,684	173,685	...	...	875,516	
8	Surat ...	262,354	81,143	985	...	32,235	68,722	...	...	485,444	
9	Panch Mahals ...	259,380	37,566	2,862	1,707	6,439	27,833	35	...	315,822	
10	Ahmedabad ...	283,366	132,164	6,057	...	38,134	88,134	...	...	497,755	
11	Kaira ...	218,107	197,656	2,557	5,679	23,906	23,907	199	3	472,044	
12	Broach ...	81,326	62,514	2,487	1,332	15,166	23,711	145	...	176,681	
Total ...		4,657,759	1,176,717	116,894	34,412	1,303,498	1,004,418	410	6	8,293,614	

#### 6.—FENCING.

115. The following statement shows the fencing work undertaken in the North Thána Division during the year:—

No.	Táluka.	Description of Fence.	Length in Miles.	Cost.	Remarks.
				Rs. a. p.	
1	Sálsette ...	Wire ...	5½	253 6 0	Old wire 4,820 lbs. purchased from Telegraph Store Department at a cost of Rs. 323 was on hand from last year, and 10,441 lbs. of such wire were purchased during the year at a cost of Rs. 579 for fencing purposes.
		Cactus ...	1½	117 13 6	
2	Bassein ...	Wire ...	1½	246 6 0	
3	Váda ...	Wire ...	1	81 1 0	
Total ...			9¾	698 10 6	

116. In the South Thána Division some fencing with wire was constructed in the Kalyán and Sháhápúr Ranges. The wire used in Kalyán being old telegraph wire, obtained from the Telegraph Department, while the seven strand wire and barbed wire used in the Sháhápúr Range was purchased in Bombay. About two miles were thus fenced at a cost of Rs. 992.

117. Cactus fencing over 49,240 running feet was planted in the Ahmednagar Division at a cost of Rs. 193-14-3, and by Beat Guards over 20,000 feet without extra cost to Government.

118. In the Poona Division two coupes at Lonikalbhor in the Haveli Range, and 2 at Handalwadi in the Bhimthadi Range were fenced with wire at a cost of Rs. 582-15-3. The wire used was seven strand wire for the 3 lower wires and barbed wire for the upper one.

119. Thorn and aloe fencing over 57,690 running feet was put down in the Sátára Division round different plantations at a cost of Rs. 194. Chilari seed was also sown round some of the plantations, but owing to an unfavorable monsoon these hedges were not very successful.

120. In the Sholápur Division 46,691 feet were fenced in with aloe, sher, and partly with cactus, at a cost of Rs. 485-10-0; seven strand wire and barbed wire was obtained from Bombay to enclose an area of 424 acres in the Karmála Range, but the work was not begun before the close of the year.

121. *Cactus*.—Prickly-pear makes a good fence, but it grows so rapidly and spreads so greatly that if it were to be adopted largely for fencing forests, there would be thousands of miles of prickly-pear to be trimmed and kept in order annually, which would entail a very large and unremunerative outlay—unremunerative because the trimmings are not saleable, nor do they easily admit of destruction and disposal. Taking these circumstances into consideration the Conservator issued an order to Forest officers, in whose divisions prickly-pear abounds, that prickly-pear fencing should be adopted only in very exceptional circumstances.

## 7.—NATURAL REPRODUCTION.

122. There are two kinds of natural reproduction, the one by means of seed shed by mature trees, and the other by means of coppicing from the roots of cut trees. The latter was very good indeed in the Northern Circle, as generally, it is not so liable to destruction by fire. The improvement in fire conservancy has had a very beneficial effect on the former. Natural reproduction is a mighty power available for reclothing forest estates, provided there is sufficient and seasonable rainfall and due care is taken to protect the areas against fire and the grazing of cattle, especially sheep and goats. In the two Thána Divisions the coppice shoots that appeared in the coupes between August and December, had attained considerable dimensions by the hot weather. In the Karjat Táluka coppice-shoots of 3 and 4 years old have attained the height of 25 and 30 feet with a diameter of 4 inches. In places where grazing is never allowed seedlings of teak and blackwood have sprung up in abundance. In the two Khándesh Divisions the reproduction by seed, supplemented by coppice shoots, was vigorous in closed forests and in places not traversed by fire.

123. In the Divisions of Násik, Ahmednagar, Poona, Sátára and Sholápur, natural reproduction is progressing steadily, and the results are very encouraging, although the lateness and unequal distribution of rain in Ahmednagar and Sátára has, to some extent, retarded progress. Lands which were absolutely bare are getting covered with seedlings, which gradually develop into trees, and thus the assisted efforts of nature in this work are decidedly successful.

124. In the Gujarát Divisions of Surat and Panch Maháls the rainfall was good and fairly seasonable. Reproduction, both by self-sown seeds and shoots from stools, was good, although injured by fires where they occurred.

## 8.—ARTIFICIAL REPRODUCTION.

125. In the North Thána Division 291 khandis of mixed seeds were broadcasted and dibbled and 100,006 seedlings were transplanted from forests or

nurseries into blanks; 17,375 bámbu rhizomes were planted. A nursery of casuarina was also started in the Sophála plantation. Hirda seeds were also sown at Rájawli in the Bassein Range, but did not germinate freely. In the South Thána Division 60 khandis of miscellaneous seed collected by Forest Guards were broad-casted over 1,034 acres in all the ranges, and 1,250 acres were pitted over and planted, the majority being in the Khálápúr and Karjat Ranges, in order to cover the areas denuded by Thákúrs, who had made dálhi clearances in the Mátherán and neighbouring forests. About 25 acres in the Tánsa catchment area were successfully planted up with seedlings of teak, ain, mango, khair, jámbhul, dháwra, &c., and the result has been very satisfactory.

126. In the East Khándesh Division 1,185 acres were brought under cultural operations by sowing 24 khandis of different kinds of seeds, but the results were not so good as desired. The usual systems of plantations were followed in the West Khándesh Division, but the rains were late and were not favourable, and forest fires, the great enemy of plant life, worked considerable damage. However the anjan reshoots in the coupes of the last few years were thriving.

127. The plantation operations in the Násik Division, which extended over 1,291 acres in several ranges, were fairly successful, although the deficiency of moisture was not conducive to this end. In the Ahmednagar Division 15,801 acres were broad-casted with 185 khandis of seeds, and 713 acres were pitted over. The results were fairly satisfactory. The plantations at Dongargan in the Nagar Range and at Hanmantgáon in the Ráhuri Range are in good condition.

128. In the Poona Division 145 khandis of different kinds of seeds were collected by Forest Guards and were sown by hired labour over 841 acres and in 115,740 pits dug by Beat Guards. In the Sátára Division 95 khandis of seeds collected by Beat Guards were sown and broad-casted over 15,873 acres and germinated freely, especially round Mahábaleshvar, where a satisfactory number of seedlings of jámbhul, hirda, pisa and of other kinds are to be seen. Bámbus were also planted and are in a very flourishing condition. The area operated over in the Sholápúr Division was 2,754 acres, and the seed sown in them germinated freely and the plants appear in good health. In the Surat Division no regular cultural operations were undertaken, as natural reproduction is vigorous. The small plantation at Chikhli has shown fairly good results. In the Panch Maháls 146 acres were planted over with mixed seeds collected by Forest Guards, but the results were not very satisfactory.

129. The total expenditure incurred under plantations in the several divisions of the Northern Circle, during the year, which amounts to Rs. 11,056 against Rs. 10,177 in the previous year, and the areas treated under regular plantations and cultural operations, are exhibited in the following statement :—

No.	Division.	REGULAR PLANTATIONS.				CULTURAL OPERATIONS.				Total Cost.		
		Area in Acres.				Area in Acres.						
		On 1st April 1889.	Added.	Exclud- ed.	On 31st March 1890.	On 1st April 1889.	Added.	Exclud- ed.	On 31st March 1890.			
										Rs.	a.	p.
1	North Thánā ...	2,209	1	...	2,210	5,917	4,649	..	10,566	850	0	0
2	South Thána ...	467	3	17	453	4,014	2,981	...	6,995	1,682	0	0
3	East Khándesh ...	10	...	10	...	12,132	1,185	...	13,317	15	0	0
4	West Khándesh ...	38	5	...	43	19,460	349	167	19,642	835	0	0
5	Násik ...	...	...	...	...	4,947	1,291	...	6,238	2,467	0	0
6	Ahmednagar ...	142	...	...	142	7,424	1,129	...	8,553	1,291	0	0
7	Poona ...	...	...	...	...	34,667	2,718	...	37,385	1,167	0	0
8	Sátára ...	2,571	187	...	2,758	85,751	15,874	...	101,625	542	0	0
9	Sholápur ...	...	...	...	...	22,445	5,368	...	27,813	2,178	0	0
10	Surat ...	...	...	...	...	917	20	22	915	1	0	0
11	Panch Maháls ...	26	31	...	57	288	146	.	434	28	0	0
	Total ...	5,463	227	27	5,663	137,962	35,710	189	233,483	11,056	0	0

130. That the cultural operations in the Northern Circle, if what has mostly consisted of broad-cast sowings of seeds can be so termed, have proved



to be abundantly successful there is no room to doubt, for it is a topic of frequent and general remark that the appearance of the hill-sides in the Deccan have changed greatly since they have been brought under treatment for reboisement, for young trees are seen to be growing where there was formerly bare rock. The Bishop of Bombay in conversation with the Conservator mentioned incidentally that in the course of his tours in the districts he had noticed often the transformation that is taking place upon the hills. Dr. Brandis, a former Inspector General of Forests to the Government of India, has recorded the satisfactory and surprisingly rapid progress made, within his recollection, in re-clothing hills in the Poona District with timber. In the Sholapur District, in the extreme east of the Deccan, where the great famine was very severe, the Collector of Sholapur has reported in a letter No.  $\frac{9}{174}$ , dated  $\frac{10}{11}$ th March 1890, to the Commissioner, after having visited forest lands in most of the ranges of that division, that there is every reason to believe that forest conservancy has been attended with excellent results. In successive Administration Reports of the Circle, mention has been made of the progress effected in reboisement. Plantations proper cost a great deal of money, and cannot be resorted to except in a small way for exceptional areas and experimental works. Where enormous forest tracts covering thousands of square miles are under management, the expenditure upon a minute system of plantations in any thing like an extended scale would, not only swallow up all receipts, but be far greater than the Imperial revenues could afford; and inexpensive broad-cast sowings, with adequate protection, show far better results, than the more detailed and very expensive cultural operations.

131. The Divisional Forest Officer, West Khándesh, records :—

“Natural reproduction is visible in all our closed forests, and in those of the heavily wooded tracts where the soil is as yet in a good condition for the seed to fall on from the surrounding seed-givers.”

132. The Divisional Forest Officer, East Khándesh, reports :—

“The obstacles to natural reproduction by seed in all the reserves in the plains during the year were fires, grazing, and two successive unfavourable seasons owing to the late rains having held off. There is no doubt that during the rains most of the areas are fairly stocked with seedlings which hardly ever survive the hot weather. The principal drawback in the Sátapdás is however fire, and it is most surprising to see the vitality of the roots of some species after the seedlings have been burnt to the ground year after year. Of course a good many succumb to this treatment, and some make a stand and establish themselves, if by any chance they are left alone by fire for one season. Natural reproduction from shoots is, as a rule, very good indeed, as it is not damaged by fire to the extent that seedlings are.”

133. The Divisional Forest Officer, Sholapur, states :—

“Natural reproduction in this division is progressing steadily, and the results are very encouraging, lands that used to be absolutely bare are getting covered with grass, and where grass was very poor and innutritious its quality has improved wonderfully. Seedlings have developed into trees thereby making a good show, and self-sown seedlings are to be found almost everywhere.”

134. The Divisional Forest Officer, Ahmednagar, records :—

“The rainfall during the year (25·17 inches) though up to the average and some 7 inches in excess of the fall of the preceding year, was very late and unequally distributed : most of the rain falling during the month of September, June, July and August being almost without any rain. These circumstances are undoubtedly adverse to the progress of natural reproduction; for, while during June, July and August many of the seeds lying in the ground must have been scorched up and deprived of much of their vitality, a large number of seeds must also have been washed out of the ground and carried away by the torrents of water that flowed off the hills during the heavy downpours of rain during September. The progress of natural regeneration, however, was by no means at a standstill, for during his inspection of the hills in Jámkhed, Karjat, Shrigonda, Párner and Ráhúri, the undersigned saw many seedlings of khair growing behind rocks and stones and under cover of bushes where the seeds found protection from the action of the water. The undersigned also noted with much interest throughout the forests of this division the growth of the nimb. Seedlings of this valuable tree are to be seen everywhere forcing their way through bushes of amoni, bekal, tarwad, korind, and even prickly pear, in which they have germinated from seeds deposited by birds. The attention of the Range Forest Officers and their subordinates has been specially drawn to this interesting circumstance, and they have been strictly enjoined to follow the example of the birds and sow seeds of nimb and other useful trees in bushes and under the lee of rocks and stones where they will get shelter from the sun and weather and protection from cattle.”



## 135. (The Divisional Forest Officer, South Thána, reports :—

"Every year a great crop of seedlings appear in the forests during and after the rains, but unless fire is kept out of the forest few of them survive. A great number also are killed by the grazing of cattle or survive to grow up stunted; but this evil, great though it be, is not so great as that of fire. Fires are a menace to the very existence of teak and the better kinds of timber trees, and the matter must be faced firmly if the present system of working of the forest is to be attended with any success and not to lead to disaster. At present the hands of the Forest Department are sadly tied owing to the unwillingness of the Revenue Department to make use of even the small amount of punitive means, placed at their disposal by Government Resolution No. 1942 of 24th March 1888. Under the present system of working a good crop of coppice shoots quickly succeeds to the cutting, reinforced by seedlings naturally sown. The coppice shoots appear immediately if the cutting is made between August and December, and attain fair dimensions by the hot weather. If the cutting is not made till later, they make little progress till the succeeding rains, and their growth is much checked, even when not entirely stopped, should by any accident fires occur in the compartment. The regulations are very strict in this matter, the contractors being compelled to fire trace their coupes, and in addition be liable to fines, if in spite of this, fires should occur. By this means fires can generally be kept out of the coupe of the year, but it is more difficult to protect the coupes of preceding years. After the coppice shoots and seedlings are two or three years old, they generally survive a fire which may traverse the coupe, but their growth is much checked, and they grow up bayoneted instead of with stems straight from the ground as they should. In some parts of the district the coppice is extraordinarily vigorous, notably in the Hálivli and Kiroli forests near Karjat, where coppice shoots of three and four years old have attained heights of 25 and 30 feet and diameters of 4 inches. In the forest of Bhawsa, which now forms part of the Tánša Lake catchment area, and where grazing has never been carried on to any extent, seedlings of teak and blackwood were observed in plenty, and the same may be said of other parts of the district where the same conditions prevail. In fact, natural reproduction in the Thána District may be said to be perfect if only nature be allowed her own way."

## 136. The Divisional Forest Officer, Surat, has remarked :—

"The rainfall of the year being good and fairly seasonable natural reproduction was satisfactory, though retarded by fire. In the Mándvi Range teak cuttings of previous years are fast regenerating by the development of well-grown coppice shoots. The stools of trees cut round the town of Mándvi have in most instances thrown out vigorous straight coppice shoots. In the warm moist villages of the Dángs reproduction, both by self-sown seeds and shoots from stools, is remarkably rapid; trees of teak and other species developing clean, straight poles of great length; but here also fire plays immense havoc by scorching seedlings, burning trunks of sound trees, and otherwise damaging all other growth."

137. Mr. Wilkins, Deputy Conservator of Forests, has reported that when he visited in the month of July 1889, the closed portions of the reserved forests on the Persick hills in the Sálsette Range of the North Thána Division, he found thousands of seedlings of teak, ain, khair, &c., the result of last year's and the previous years' broad-casting, which were thriving well and had established themselves.

138. There is not the least doubt that all sowings of seeds, whether in open or closed forests, are of decided benefit; of course the results are and must be infinitely better where there is adequate protection against man, beast and fire. But seeds sown in open forests subjected to over-grazing germinate, and although an infinitesimally small percentage of the seedlings escape destruction by fire, and by the mouths and hoofs of cattle to grow into trees, still some do avoid, by great luck, an early death and become big trees. The portion of a seedling above the ground dies down generally, or is burnt down where fires occur, for a few years successively, reappearing in the rains, for the roots retain life, while the root stock goes on thickening, until eventually it sends up a vigorous shoot, which survives till the succeeding rains, and then the young tree soon becomes defensible.

\*9.—EARLY THINNING, REMOVAL OF INFERIOR SPECIES,  
CUTTING OF CREEPERS, &c.

139. \* The eradication of prickly pear (*Opuntia dillenii*) from within the boundaries of reserved forests in all the divisions of the Northern Circle, has been performed by Forest Guards where the growth is of recent origin, and by hired labour where it was old and covers much ground in dense growth. In the divisions of Násik, Ahmednagar, Poona and Sátára Rs. 124, 251, 477 and 6, respectively, have been spent on this account. Forest Guards are provided with bill-hooks for cutting creepers in the forests of their own beats.

## 10.—EXPERIMENTS WITH EXOTIC TREES.

140. The Carob (*Ceratonia siliqua*), "Rain tree" (*Pithecolobium saman*), several varieties of Eucalyptus, the Mahogany, the Divi divi and other foreign trees which have been experimentally reared in past years in the Dongargan reserved forest of the Nagar Range in the Ahmednagar Division are growing well. The Mahogany seedlings in the Násik Division are doing remarkably well. The small Casuarina plantations along the sea shore on sand hills in the Máhím Range of the North Thána Division are making a good show. The Divi divi trees planted some years ago in the Padmála forest of the Erandol Range of the East Khándesh Division are in very good and vigorous condition, as are also the *Inga dulsis* seedlings in the Pádli and Tándulvádi plantations of the Sátára Division.

141. The results of the experimental sowing of date palm, referred to in paragraph 135 of last year's report, have been variable, very few of the seedlings transplanted from the garden of the Divisional Forest Officer's house at Násik to the Páthardi reserved forest have done well. Out of 689 seedlings in the Sátára Division, some died during last cold weather, while the others have made very slow growth during the year. In the Sholápur Division 250 plants in different reserved forests are in good condition, but those in the Bársi and Sholápur Ranges have not done at all well. In the Panch Maháls Division the plants referred to in paragraph 135 of last year's report are in a fairly healthy condition, the most flourishing being a little over 12 inches in height.

## 11.—COMMUNICATIONS AND BUILDINGS.

### (a).—ROADS AND BRIDGES.

142. The amount spent upon the construction and repairs of roads at the cost of the Forest Budget was only Rs. 788, made up of Rs. 70 in the Sátára Division, on repairs to the road from Kola in Karád to Dhamni and Ambaoda in Pátan, which serves the teak forests in the Vang valley, and Rs. 718 in the Surat Division on ordinary repairs to the Dáng forest road. In no other divisions of the Northern Circle was expenditure incurred under this head, from the Forest Budget by Forest officers, who have no time, even if they possessed the technical knowledge, to devote to road-making.

143. The Public Works Department have done much road-making during the year at the expense of the Provincial Services budget, which will be of the highest utility in the transport and removal of timber and other forest produce. A brief sketch of these works is as under.

The most, if not all, these projects have been undertaken at the instance, advice, or with the supporting opinions, of the Forest Department :—

### I.—Thána District.

(a) *Dáhánu-Jowhár road*.—Rs. 16,759 were expended upon it during the year, making Rs. 1,79,747 up to date; at times more than one thousand carts used the road daily.

(b) *Váda-Shirghát road*, which is to be 31 miles in length.—Rs. 41,532 has been spent upon it during the year, making a total expenditure of Rs. 83,951 out of the sanctioned estimate Rs. 1,44,645. This road will open out the valuable East Váda and Mokháda forests to the country above the Western Gháts in the Igatpuri Range of the Násik District; and from Váda another section of this road leading past Manor bandar, the great timber-export bandar of this part of the Thána District, goes to Máhím on the sea-coast, a distance of 33 miles from Váda, Rs. 11,201 has been spent on this section during the year.

(c) *Bhiwndi to Váda road*.—Rs. 4,413 were expended during the year, making the total cost Rs. 1,39,020 up to date, against an estimate of Rs. 14,61,005. This road serves the forests of East Bhiwndi and West Váda about Khoj Fort, &c. Some other short roads have been under construction in the Sálsette and Kalyán Ranges; and surveys have been made of roads over Nánewli and Maidwan Khinds which will improve forest communications.

## II.—Khándesh Collectorate.

Road from Ranáldá to Nandurbár was completed; and a road from Dondiácha to the Tápti river and thence to Sháháda under construction; this road will be used for the transport of timber from the Akráni and Sháháda forests towards the central markets of Khándesh.

## III.—Ahmednagar District.

Two roads have been making in the Akola Rrange which may be of much service to this Department:—

(a) From the Kolhár-Bári road near the village of Randha through the villages of Guhera, Bhandardara, Sámrad, a distance of 9 miles.

(b) Jamgaon to Kotul road, which forms part of the scheme for opening up the wild hill forest-clad country in the west connecting the two important market towns of Rajur and Kotul.

## IV.—Poona District.

The Ghoda and Ámbegaon road in the Khed Táluka has been continued; several teak forests will be tapped by it.

## V.—Sátára District.

A new road from Pusegaon to Vadúz, 12 miles in length, has been commenced at an estimated cost of Rs. 30,851, upon which Rs. 10,890 have been spent.

## (b).—BUILDINGS.

144. Government in their Resolution No. 216 A—969, dated 30th May 1889, in the Public Works Department, were pleased to empower the Conservator of Forests to deal with proposals for new departmental works and for additions and alterations to existing works, provided the expenditure did not exceed Rs. 500 in each case, and they placed at his disposal from the Provincial Services budget the sum of Rs. 3,000 for the purpose. The following statement will show in detail the works sanctioned during the year from the discretionary grant of Rs. 3,000, under the orders quoted above:—

No.	Executive Officer.	Name and locality of Works.	Amount sanctioned.
			Rs.
1	Executive Engineer, Ahmednagar.	For providing a paving in the Range Forest office and seed-room in the Mámlatdár's kacheri at Karjat ... ..	109
2	Do. Kaira ...	For providing a seed-room for the Forest Department in the compound of the Máhal-kari's kacheri at Hálol ... ..	203
3	Do. Sátára ...	For paving a concrete and Portland cement flooring in the Forest Ranger's office at Islámpur in the Sátára Division ... ..	30
4	Do. Khándesh ...	For providing paved floor in the Range Forest office at Chálisgaon ... ..	83
5	Do. do. ...	For providing a window in the Forest office in the Mámlatdár's kacheri at Chopda ... ..	74
6	Do. Sátára ...	For enlarging the office for Forester at Koregaon in the Sátára Division... ..	36
7	Do. Násik ...	For providing an additional store-room to the office of the Range Forest Officer at Chándor ... ..	462
		For providing a teakwood record-shelf in the office of the Range Forest Officer at Chándor ... ..	25
8	Do. Thána ...	For providing teak plank ceiling to the Range Forest office at Kelwa Máhim ... ..	111
9	Do. do. ...	For providing plank ceiling to the Range Forest office at Bhiwandi in the Thána District ... ..	60
		Total ...	1,193

145. In addition to the above, the Public Works Department had undertaken the construction of six hirda depôts in the Akola Táluka of the Ahmednagar Division. Two depôts, *viz.*, at Shinganvádi and Ghátghar, were completed before the close of the year, while the remaining four were still under construction. Office accommodations for Range Forest officers was likewise built by the Public Works Department, at the instance of the Conservator, within the premises of kacheries of Bhusával, Bhadgaon and Navápur in the Khándesh District. Seed-rooms in the offices at Karjat and Shrigonda in the Ahmednagar District were paved. An office and store-room was built for the Range Forest Officer of Málsiras in the Sholápur District; and a seed-room for the Range Forest Officer, Hálol, in the Panch Maháls Division.

146. The expenditure incurred by the Divisional Forest officers in the Northern Circle, in building Forest Guards' huts, tempoary depôt-houses, and upon ordinary repairs to existing rest-houses and forest posts, is given in the following statement:—

No.	Division.					Amount.		
						Rs.	a.	p.
1	North Thána	...	...	...	...	515	1	0
2	South Thána	...	...	...	...	352	13	6
3	East Khándesh	...	...	...	...	128	3	0
4	West Khándesh	...	...	...	...	943	0	8
5	Násik...	...	...	...	...	333	1	0
6	Poona...	...	...	...	...	120	0	9
7	Sátára	...	...	...	...	41	4	6
8	Surat ...	...	...	...	...	457	15	2
9	Panch Maháls	...	...	...	...	36	0	9
Total ...						2,927	8	4

## CHAPTER IV.

### OUTTURN AND WORKING.

#### I.—DEPARTMENTAL OPERATIONS.

##### (1) TIMBER.

147. The following statement shows an approximate estimate of the outturn, in cubic feet of the timber exploited from the forests by Government Agency, with the cost incurred and the revenue realised by its sale, during the year 1889-90, as compared with the outturn, cost and receipts of the preceding year:—

No.	Division.	1888-89.					1889-90.				
		Timber in the rough; Logs.	Timber in the rough; Poles.	Miscellaneous.	Cost.	Receipts.	Timber in the rough; Logs.	Timber in the rough; Poles.	Miscellaneous.	Cost.	Receipts.
		C. ft.	C. ft.	C. ft.	Rs.	Rs.	C. ft.	C. ft.	C. ft.	Rs.	Rs.
1	North Thána	...	82,938	...	4,402	14,771	...	10,206	...	457	2,449
2	South Thána	...	18,100	7,398	2,344	7,665	...	41,868	...	6,558	5,522
3	East Khándesh	...	2,500	11,250	...	904	77	19,700	...	1,078	9,585
4	West Khándesh	...	18,375	21,921	...	3,251	...	50,489	1,983	2,844	33,366
5	Násik	...	578,077	...	1,665	29,356	...	...	...	472	4,140
6	Ahmednagar	...	296,221	...	1,437	7,336	...	1,14,882	308	1,442	6,967
7	Poona	...	59,946	41,971	...	2,934	97,547	34,738	...	3,191	25,596
8	Sátára	...	...	38,531	...	1,797	...	33,452	...	1,892	14,912
9	Sholápur	...	1,352	...	...	15	...	10	...	21	271
10	Surat	...	65,233	108,577	2,088	3,552	81,066	2,20,146	849	11,535	31,522
11	Panch Maháls	...	20,249	...	3,940	426	5,348	504	1,949	263	441
Total		745,732	619,509	13,426	22,727	1,74,381	265,005	525,995	5,089	29,753	1,34,771